

Claims

1. A process for producing hollow bodies comprising fiber-reinforced ceramic materials, which comprises
- 5 - in a first step, producing compressible cores whose shape corresponds essentially to the geometry of the hollow spaces to be formed, at least in the plane perpendicular to the pressing direction,
 - in a second step, producing a green body by
10 introducing the abovementioned compressible cores and a press moulding composition comprising binder and fiber material into a mold,
 - in a third step, pressing the fiber-containing composition, with the core being compressed, at
15 least in the pressing direction, by at least 5 % of its dimension in the pressing direction,
 - in a fourth step, curing the fiber-containing composition,
 - in a fifth step, carbonizing the cured green body,
20 also referred to as intermediate body, by heating to a temperature of from about 750 °C to about 1100 °C in a nonoxidizing atmosphere to give a C/C body,
- where the compressibility of the cores permits, under the pressing conditions, a length change in the pressing
25 direction of at least 5 % and the cores comprise material which, in the fifth step, pyrolyzes or is at least partially pyrolyzed with a reduction in volume.
2. The process as claimed in claim 1, wherein,
- 30 - subsequent to the fifth step,
 - in a sixth step, the C/C body is infiltrated with a liquid metal while retaining its shape, with at least partial reaction of the carbon in the matrix of the C/C body with the metal occurring to form
35 carbides.

3. The process as claimed in claim 1, wherein
- in the fourth step, the fiber-containing composition
is cured by heating to a temperature of from 120 °C
to 280 °C.

5

4. The process as claimed in claim 1, wherein the third
and fourth steps are carried out simultaneously or partly
overlapping in time.

10

5. The process as claimed in claim 1, wherein
multilayer cores comprising foamed polymers in sandwich-
like structures in which at least one of the upper or
lower surfaces of the core is covered by a hard polymer
which is infusible under curing conditions are used.

15

6. The process as claimed in claim 1, wherein the press
moulding compositions contain carbon fibers having a mean
length of not more than 50 mm.

20

7. The process as claimed in claim 1, wherein the press
moulding compositions contain bundles of carbon fibers
having a mean length of less than 5 mm.

25

8. The process as claimed in claim 2, wherein the metal
used for infiltration is silicon or a silicon alloy.

30

9. The process as claimed in claim 8, wherein the
silicon alloy comprises a metal selected from among
chromium, iron, nickel, cobalt, titanium and molybdenum.

35

10. A hollow body comprising fiber-reinforced ceramic
material obtainable by the process of claim 1 in the form
of an annular disc in which at least one hollow space
extends from the periphery to the inner edge of the
annular disc.

11. A method of use of a hollow body as claimed in claim
10 as brake or clutch disc comprising forming annular
discs by press moulding of a carbon-fiber reinforced
body, curing and carbonizing said body, and infiltrating
5 the carbonized body with silicon or a silicon alloy under
formation of the respective carbides.